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(57) Abstract

- 22 -

DATA PROCESSING TECHNIQUE FOR
SCORING BANK CUSTOMER RELATIONSHIPS
AND AWARDING INCENTIVE REWARDS

5 This invention pertains to data processing
techniques useful in Banks. More particularly this
invention pertains to a data processing technique
for determining the number of different
Relationships that a customer has with the Bank,
10 scoring the Relationships and awarding Incentive
Rewards based on the Relationship score. As used
herein the term "Bank" is intended to mean all types
of financial service institutions, including banks,
savings and loan associations, credit unions and the
15 like, which offer a variety of financial and
investment services to customers; the term
"Relationship" is intended to mean each type of
financial transaction, account or interaction which
the customer may establish with the Bank, such as a
20 checking account, savings account, consumer loan,
credit card, mortgage, investment, certificate of
deposit, insurance policy, new customer referral or
the like; and the term "Incentive Reward" is
intended to mean some type of consideration or
25 recognition established and given by the Bank to the
customer in recognition of the number and
characteristics of the customer's Relationships,
such as an increased interest rate on deposit
accounts, a reduced interest rates on loan accounts,
30 reduced Banking service fees or the like.

Background of the Invention

There is a recognized need in the financial
services industry to attract and retain loyal
35 customers. A loyal customer is one who establishes

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portion or all of the Bank's customers may be enrolled or participating in the program. Other customers may not be enrolled in the program. A score card is manually maintained for each customer enrolled in the Loyalty Banking Program. Points are manually calculated based on the information manually entered on the score card, and Incentive Rewards are manually awarded on a periodic basis for the number of Relationships maintained by the customer at the Bank. The point awards may be increased in relation to the length of time the customer maintains the Relationships at the Bank. Based on the points accumulated by the customer as represented by the score on the score card, the customer periodically receives Incentive Rewards.

The implementation of a customer incentive program for Bank customers has complexities not found in customer incentive plans in other industries. The Relationships between the Bank and any customer may be quite numerous and complex, involving a number of different kinds of accounts and interactions. Most other incentive programs require tracking of only one customer factor such as miles travelled in a frequent flyer program or the total dollar volume of purchases in a grocery store trading stamp program.

Implementation of the assignee's manual Loyalty Banking Program is difficult, time consuming and labor intensive. There is always the increased risk of incorrect calculations resulting from human computations. Maintaining a manual Relationship score card on each Bank customer duplicates much of

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scoring and Reward awarding process assembles data representing the Relationship between the Bank and its customers and automatically determines the Relationship score for each customer from the assembled data. The Relationship score may be based on the number, type and duration of the Relationships. Also in accordance with this aspect of the invention Incentive Rewards are awarded to each customer based on the automatically determined Relationship score. Further in accordance with this aspect of the invention the Relationship score to be awarded for the type and duration of each Relationship may be established or changed to meet the requirements of the Bank.

Another significant aspect of this invention is a Relationship scoring and Incentive Reward awarding process that automatically obtains information about customers' Relationships with the Bank directly from the Bank's computer data base, or customer information file, that is maintained by the Bank for its day-to-day data processing operations. By obtaining the data directly from the customer information file, the labor required compared to a manual Bank customer incentive program is further reduced and human errors in transferring data are virtually eliminated. In accordance with this aspect of the invention information representing customer Relationship is automatically extracted from the customer information file. The extracted information is automatically used by the Relationship scoring and Incentive Reward awarding

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Brief Description of the Drawings

Fig. 1 is a diagram showing the flow, sources and types of information, and the types of human and mechanical interaction and execution, involved a process for scoring Bank customer Relationships and awarding Incentive Rewards using a computer, in accordance with the present invention.

Fig. 2 is a block diagram of one example of the computer shown in Fig. 1.

Fig. 3 is a block diagram of another example of the computer shown in Fig. 1.

Fig. 4 is a state transition diagram illustrating states during execution of the process illustrated in Fig. 1.

Fig. 5 is a chart of the procedures executed during a manual updating state and a parameter establishing state of the process shown in Fig. 4.

Figs. 6A, 6B and 6C form a single flow chart diagram of the steps involved in executing the manual updating state of the process, as shown in Figs. 4 and 5.

Figs. 7A, 7B and 7C form a single flow chart diagram of the step of determining a Relationship score shown in Fig. 6B.

Fig. 8 is a flow chart diagram of the steps of determining customer vesting in Incentive Rewards shown in Fig. 6B.

Fig. 9 is a chart of the procedures executed during an automatic updating state of the process shown in Fig. 4.

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Reward awarding process 20, and which operates on the Bank's computer 22. The CIF 30 contains customer data 32 describing each of the customers 24 of the Bank. The customer data 32 in the CIF 30 typically includes the name, address and social security number of each customer 24, and an identification of and information concerning each Relationship the customer 24 has established with the Bank. Customer data 32 from the CIF 30 is supplied by the computer 22 as needed to execute the process 20. When a new customer 24 establishes a Relationship, or an existing customer 24 establishes a new Relationship or changes a Relationship, the customer data 32 necessary to establish or change the Relationship is supplied to the process 20 and the CIF 30 by the Bank staff 26. In this case, the customer 24 supplies the information to the staff 26 and the staff interacts with the process 20 and the CIF 30 to enter this new or changed data 32.

In general the customer data 32 supplied to the process includes data that is furnished by the customer 24 for use in the process 20 and data that is furnished by the CIF 30 for use in the process 20. The CIF 30 typically contains information that is not relevant to the process 20 which is used in the other day-to-day data processing functions of the Bank, in addition to relevant information supplied to and used in performing the process 20 which is typically only the customer data 32. Furthermore, the CIF 30 may not contain all of the customer data 32 relevant to performing the process 20, in which case the

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customer are added together to calculate a Relationship score 36 for that customer 24. The Relationship score 36 is used to determine the customer's entitlement to, or vesting in, various customer Incentive Rewards 38. The Incentive Reward 38 is communicated directly to the customer 24, such as in the exemplary case of a certificate of entitlement mailed to the customer, or the Incentive Reward 38 is automatically communicated to the CIF 30 for the benefit of the customer, such as in the exemplary case of an increased interest rate on a deposit account or a reduced interest rate on a loan account.

The Relationship score 36 and the Incentive Rewards 38 are also directly communicated directly to the staff 26 in response to a query 40 which either the staff 26 or the customer 24 through the staff 26 may generate. In this manner, the staff 26 may inform the customer 24 of the Incentive Rewards 38 which the customer has received. Depending on whether the management 28 has made a policy decision concerning whether or not the customer 24 is to receive information concerning the Relationship score 36, the staff may also inform the customer of the Relationship score. A query 40 may also initiate other procedures available from the process 20.

The management 28 can also request various types of reports concerning the operation of the process by generating a report request 42, in response to which a report 44 will be supplied. The type and format of the report 44 is established by

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line memory 52. The processor 50 retrieves the operating instructions and CIF data from the off-line memory 52 to perform the Relationship scoring and Incentive Reward awarding process 20 (Fig. 1).
5 A random access memory (RAM) 54 stores data and operating instructions in a form readily available to the processor 50 while the computer 22 is performing the Relationship scoring and Incentive Reward awarding process 20 (Fig. 1). A printer 56
10 receives information from the processor 50 and prepares the written reports 44 (Fig. 1). At least one but typically a plurality of terminals 58 are connected to the computer 22 by which to communicate information from a keyboard 60 and by which to
15 receive information at a visual display 62.

Another example of a typical configuration of the computer 22 is shown in Fig. 3. In this example, the computer 22 comprises a main or central computer 64, typically a mainframe computer,
20 communicating with a microcomputer file server computer 66 over a data link 68. The file server computer 66 may be connected to one or more microcomputer work stations 70 by individual connections or by a local area network 72. The
25 Relationship scoring and Incentive Reward awarding process 20 (Fig. 1) is performed primarily by the file server computer 66 and the work stations 70 acting in concert with the main computer 64.

The main computer 64 includes a processor 74 to
30 which an off-line memory 76 and a RAM 78 are connected. The main computer 64 performs the typical Bank data processing functions and supplies

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Reward awarding process 20 (Fig. 1) are downloaded for execution. The operating instructions and data from the memories 80 or 84 of the file server computer 66 are communicated over the local area network 72 and are stored in a RAM 94 or other suitable memory to be readily usable by the processor 92. Significant aspects or all of the Relationship scoring and Incentive Reward awarding process 20 (Fig. 1) can then be executed by the work station 70. Data and commands may be supplied to the processor 92 from a keyboard 96. A visual display 98 displays information available at the work station 70. After the computational aspects of the process 20 are completed, the resulting data is uploaded to the file server computer 66 over the local area network 88. Information necessary to update the CIF in the memory 76 or 78 of the main computer 64 is then transferred from the file server computer 66 to the main computer 64 through the data link 68.

The functionality of the Relationship scoring and Incentive Reward awarding process 20 is generally illustrated by the state transition diagram shown in Fig. 4. The various states of execution of the process 20 and the transitions between the states occur from and in relation to the actions and information previously described in conjunction with Fig. 1.

The transitions to and between the different states of execution of the process 20 may be manually initiated in response to the input of customer data 32 or of a query 40 from customers and

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Relationship score. The scale file contains information defining the degree to which a customer is entitled to be awarded an Incentive Reward. The report format file contains the information required to organize the customer information for written reports and to prepare the reports.

A transition to a manual updating state 106 is initiated by the routing state 100 in response to new customer data 32 or a query 40 about a customer's Relationship score or vesting. The manual updating state 106 is the state of the process in which customer data 32 about customers that are initially enrolling in the program is supplied, such as data required to locate the corresponding customer data 32 in the CIF. The manual updating state 106 also permits manually entering any customer data 32 that is not available from the CIF 30, changing customer data 32, performing a query about the customer's Relationship score 36 or Incentive Rewards 38, or removing the customer data 32 of a customer who is no longer enrolled in the program. The manual updating state 106 includes a data file building procedure that creates or updates a plurality of Relationship banking files (RBF) 108. The RBF 108 are created the first time the process 20 transitions to one of the manual updating state 106 or an automatic updating state 110.

The RBF 108 are the principal informational files of the process 20 and provide the relevant customer data 32 received from the CIF 30 and the customers 24 about customer's Relationships with the

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After retrieval, the information in the customer database file of the RBF 108 may be modified in accordance with new or changed customer data 32. The cross reference files of the RBF 108 may also be retrieved and updated in accordance with newly supplied customer data 32. Prior to completion of execution of the manual updating state 106, the modified customer database file and cross reference files are stored to update the RBF 108.

Information from the CIF 30 may be used in building or manually updating 106 the customer database file of the RBF 108, if such information is present in the CIF. In such circumstances a transition from the manual updating state 106 to a CIF information extracting state 112 occurs. The CIF information extracting state 112 obtains the information from the CIF 30 and manipulates its format to make available it for use by the process 20. A transition back to the manual updating state 106 occurs to allow the information extracted by the procedures of the CIF information extracting state 112 to be used in building and updating the information in the customer database file, and possibly other files, of the RBF 108.

Several Bank operations software programs are commercially available for creating and maintaining the CIF 30. Many of the available Bank operations software programs have customizing options which allow the Bank to tailor the Bank operations software program and the CIF 30 to its own needs. Because of this variability, it is typical for the

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service fees or increase account interest, based on the award of an Incentive Reward of this type applicable to the customer's Relationships.

5 To generate a report 44, a report producing state 116 of the process 20 is entered and the procedures associated with this state are executed. Reports 44 are generated in response to a report request 42 which is recognized by the routing state 100 to cause a transition to the report
10 producing state 116. In the report producing state 116 the master dictionary file and the report format file of the SPF 104 and the customer database file of the RBF 108 are retrieved. The report request 42 includes a selection of one of the report
15 formats which is available from the report format file and the report request also specifies the type of information to be included in the report 44. The specified information from these files is obtained and processed to produce the report 44.

20 If management has requested information not included in the customer database file of the RBF 108, the report producing state 116 may initiate a transition to the CIF information extracting state 112 to extract information from the CIF 30 to
25 supplement information retrieved from the customer database file of the RBF 108. For example, if not all customers of the bank are enrolled in the Relationship scoring and Incentive Reward awarding process, and the management of the Bank wishes to
30 compare information about enrolled customers and non-enrolled customers, information about non-

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vertical grouping of informational elements illustrated in the Table.

Each row of the master dictionary file (Table A) defines one of the fields of the customer database file of the RBF 108. Each column of the master dictionary file (Table A) defines an attribute of the field defined by the row. Each row of the customer database file (Table B) is a customer record. Each column of the customer database file (Table B) is a separate field. Each customer record in the customer database file (Table B) is formed by the information pertinent to that customer obtained from all of the fields of information in the customer database file as defined by the master dictionary file (Table A). The definition for each customer record is therefore obtained from the master dictionary file.

The row of the master dictionary file (Table A) entitled "Field Name" identifies the type of information presented in a field of the customer data base file (Table B). The examples shown in this column are Customer Name, Deposit Accounts such as savings accounts, Loans, Safe Deposit for safe deposit boxes rented from the Bank by the customer, Years for the date on which the customer first established a Relationship with the Bank used to determine the years of longevity of the Relationship between the customer and the Bank, and SSN for the customer's social security number. The "Field Type" column identifies the character of the of data contained in the field: "C" meaning comment or text information; "N" meaning a numerical value; "L"

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deposit accounts the customer has, the number of loan accounts the customer has, whether the customer has a safety deposit box, the date the customer first became a customer of the Bank and the customer's social security number.

5 An example taken from Tables A and B illustrates the interrelationship between the master dictionary file and the customer database file in calculating the Relationship score. The customer
10 named "Anderson," social security number 123-45-6789, has two deposit account Relationships, one loan Relationship and a safety deposit box Relationship with the Bank. For each deposit Relationship, defined by the master dictionary table
15 "Field Type" column as a numerical value, and by the "Fixed" column to be used in determining the relationship score, Anderson is entitled one point. Similarly Anderson is entitled to two points for each loan Relationship. Anderson is also entitled
20 to five points for having a safety deposit box Relationship based on the information in the "Safe Deposit" field and one point for each year that Anderson has had a Relationship with the Bank, based
25 on the date in the "Years" column. The points for loan Relationships held by Anderson's joint owner, if any, are additive to Anderson's points, but the points for other Relationships of Anderson's joint owner are not additive with Anderson's points.

30 These fields and information contained in Tables A and B are exemplary. The parameters established in the master dictionary field may define additional or different fields, which will

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is present in this same row. By using the vesting or scoring concept represented by Table C, Incentive Rewards such as a percentage point increase in a deposit account or a percentage point decrease in a loan rate may be partially awarded. Of course, other types of Incentive Rewards may not admit to being divided, and in which case the vesting or scoring concept would simply be a selected limit of points which the Relationship score would have to exceed to entitle the customer to receive the non-divisible Incentive Reward.

The procedures executed during the manual updating state 106 and the parameter establishing state 102 of the Relationship scoring and Incentive Reward awarding process 20 shown in Fig. 4 are generally illustrated by the procedures chart illustrated in Fig. 5. As shown in Fig. 5, a conventional program control procedure 120 and a conventional edit main menu procedure 122 establish an environment in the computer 22 (Fig. 1) in which the Relationship scoring and Incentive Reward awarding process 20 (Fig. 4) operates. The parameter establishing state 102 involves the execution of a conventional data table building procedure comprising a parameter maintenance handling procedure 124 which receives the parameter information and a SPF updating procedure 126 which updates the SPF 104 (Fig. 4) in response to the parameter maintenance handling procedure 124. The parameter establishing state 102 also includes a conventional screen data editing procedure 128 to

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and vesting procedure 146. The new or updated information, or confirmation of a delete transaction, is then displayed by the screen editing procedure 128.

5 Steps involved in the execution of the procedures occurring during the manual updating state 106 are shown in the flow chart of Figs. 6A, 6B and 6C. The execution of the procedures of the manual updating state 106 is
10 started 150 manually by a member of the Bank staff who enters customer data 32 (Fig. 1) or performs a query 40 (Fig. 1). The staff member enters 152 information identifying whether the transaction to be performed is a query about customer information,
15 a change to the customer information, an addition of customer information or a deletion of customer information. The operator then enters 154 a field of the customer database (Table B) by which customer information is to be located. The field may be
20 specified as either the name of the customer, the account number of the customer or the social security number of the customer. Alternatively searching for customers by account number may not be permitted, in which case searching may only be
25 accomplished by the customer's name or social security number.

In the case where searching by account number is permitted, if the search is to be performed by
account number 156 the customer's social security
30 number is retrieved 158 from cross-reference file 160 in the RBF 108 (Fig. 4). If the customer is not to be located by account number 162, or if

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file 172 of the RBF 108 (Fig. 4). The data in the record is then updated 186 from information furnished by the customer and entered 188 by the staff.

5 Alternatively the customer's record may be further updated 186 by information extracted from the CIF 30 by the CIF information extracting state 112 of the process 20 (Fig. 1). The updated customer record is then stored in the customer
10 database 172 of the RBF 108 (Fig. 4).

 The customer's Relationship score is determined 190 from the updated customer's record and point values assigned to the Relationships represented by the customer's record by reference to
15 the "point" attribute of the master dictionary file (Table A) 180 of the SPF 104 (Fig. 4). The customer's vesting in the Incentive Rewards to be awarded is determined 194 based on the Relationship score by reference to the scale file 196 (Table C)
20 in the SPF 104 (Fig. 4).

 The customer's Relationship score and vesting in Incentive Rewards are stored in the customer database file 172 after they are determined. Alternatively the Relationship score is determined
25 for each query and is not stored.

 After the customer vesting is determined 194 the updated information including the new Relationship score and Incentive Reward vesting are displayed 198 by the screen data editor 128
30 (Fig. 5). Also, a written report may be printed 200, either on request by the staff member entering the data or automatically. Further, the

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If the "field type" attribute from the master dictionary file (Table A) 180 designates the field as a numeric field 220 the numeric value of the field is multiplied 222 by a number of points set for that field by the "points" attribute from the master dictionary file (Table A) 180 to produce the points for that Relationships. If the "field type" attribute designates the field as a logical field the value of the field is a logical value, i.e., "yes" or "no". If the value of the field is "yes" 226 the points for the Relationship of that field are set 228 to the point value defined by the "points" attribute from the master dictionary file 180. If the field is designated by the "field type" attribute in the master dictionary file 180 as a date 230 the date value of the field is subtracted 232 from a present date 234 to calculate a number of years between the date value of the field and the present date 234. The point value defined by the "points" attribute from the master dictionary file 180 is multiplied 236 by the number of years to determine the points for the number of years represented by the date.

If the customer is not a joint customer with another customer of the Bank 238 the point value thus determined is the point value for the field. If however, the customer is a joint Relationship owner with another customer 240, a field of the other joint owner's database record which is the same field as the field of the customer database file 172 being read, is read and a point value is determined 242 for the corresponding field of the

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state 106 (Fig. 6B). The scale file (Table C) 196
of the SPF 104 (Fig. 4) is retrieved and scanned 266
starting with the bottom row of the scale file
(Table C). The value in the "above" column
5 (Table C) retrieved from a row is compared 268 in
the "above" column is compared to the customer's
Relationship score. If the value on the "above"
column is less than or equal to 220 the Relationship
score for the customer the vesting for the customer
10 is set 272 at the value retrieved from the "percent"
column that is in the same row of the scale file
(Table C) 196 as the value from the "above" column
that was less than or equal to the Relationship
score. The vesting percentage is then stored 274 in
15 the customer database file 172 of the RBF 108
(Fig. 4).

The procedures performed by executing the
automatic updating state 110 and the CIF information
extracting state 112 of the process 20 are generally
20 illustrated by the procedural chart in Fig. 9. The
conventional program control procedure 120
establishes the operating environment in the
computer 22 (Fig. 1). Data is extracted from the
CIF 30 (Fig. 4) by a read CIF procedure 226 of the
25 CIF information extracting state 112. In the
automatic updating state 110 an RBF retrieving
procedure 278 retrieves the customer database files
and cross reference files from the RBF 108 (Fig. 4)
and a system parameter retrieval procedure 280
30 retrieves the master dictionary file (Table A) and
scale file (Table C) from the SPF 104 (Fig. 4). The
information from the customer database file

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read CIF procedure 276 (Fig. 9). The record is then updated 296 in accordance with the data extracted from the CIF 30. The updated customer data record is stored in the customer database file of the RBF 180 (Fig. 4).

5 The updated customer data record forms the basis for determining 190 the customer Relationship score from information in the master dictionary file 180 of the SPF 104 (Fig. 4), in the same manner as described above in conjunction with Figs. 7A, 7B and 7C for the score determining step 190 of the manual updating state 106 (Fig. 4). The customer's vesting is determined 194 from the customer's Relationship Score and from information in the scale file 196 of the SPF 104 (Fig. 4) in the same manner as described above in conjunction with Fig. 8 for the vesting determining step 194 of the manual updating state 106 (Fig. 4).

15 The Relationship score and vesting percentage are stored in the customer database file 172 of the RBF 108 (Fig. 4). As with the manual updating state 106 (Fig. 4), the Relationships scores and vesting percentages may alternatively be determined only upon a query. If scores and vesting are only determined on query, the scores and vesting are not stored in the customer database 172.

20 The updated information may also be printed 298 in an update report. Further, the Incentive Reward may be automatically credited to the customer by entering the Reward awarding state 114 and making appropriate adjustments to information in the CIF 30.

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reports on Bank customers who are not enrolled in the program; comparisons of product usage by various categories of customers; and graphical reports.

5 A desired report format is retrieved 312 from a report format file 314 in the SPF 104 (Fig. 4). If the report format requires 316 information about customers who are enrolled in the program the social security numbers of the enrolled customers are
10 retrieved 318 from the customer database file 172 of the RBF 108 (Fig. 4). For each social security number a customer record (row of Table B) is retrieved 320 from the customer database file 172 and updated 322 by data extracted from the CIF 30 by the procedures of the CIF information extracting
15 state 112.

The Relationship scores are determined 190 in the same manner as for the score determining step 190 (Fig. 6B) of the manual updating state 106 (Fig. 4) described above in conjunction with
20 Figs. 7A, 7B and 7C. Customer vesting is determined 194 in the same manner as described above in conjunction with Fig. 8 for the vesting determining step 194 (Fig. 6B) of the manual updating state 106 (Fig. 4). The information
25 required by the report format retrieved 312 from the report format file is printed 324 in a written report 44 (Fig. 1) in the format specified.

If the last social security number has not been reached 326, the steps repeat from the step of
30 retrieving 320 the customer record. When the last social security number is reached 328, if it is not

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The Relationship scoring and Incentive Reward awarding process 20 (Fig. 1) advantageously implements a technique for scoring Relationships that a customer has with a Bank and awarding
5 Incentive Rewards to the customer based on specified parameters selected by the Bank management related to these Relationships. Direct access to information in the CIF 30 (Fig. 1) is provided to accurately and efficiently extract customer data 32
10 (Fig. 1) needed to execute the process 20. The labor required to establish, maintain and update the necessary information records is greatly reduced over a manual system and data transfer errors are substantially eliminated.

15 The Relationship scoring and Incentive Reward awarding process of the present invention automatically determines and tracks the Relationship score and vesting of each customer. The customer information, score and vesting are automatically
20 updated whenever new information is furnished by the customer or Bank staff for manual input, and is further automatically updated to reflect changes in the CIF of the Bank operations computer.

The Relationship scoring and Incentive Reward
25 awarding process can be customized to the needs of individual Banks. This customization allows the Bank to utilize a customer Incentive Reward program effectively as a management and marketing tool, providing incentives to customers for "loyalty."

30 The Relationship scoring and Incentive Reward awarding process is customized by modifying the SPF 104 (Fig. 4) to establish that information in

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THE INVENTION CLAIMED IS:

1. A Relationship scoring and Incentive Reward awarding process wherein at least one enrolled customer is entitled to receive at least one Incentive Reward when a Relationship score for the customer exceeds a predetermined value, and wherein said Relationship score is derived from customer data representing the enrolled customer's Relationships with a Bank, said process comprising the steps of:
- obtaining the customer data representing the enrolled customer's Relationships with the Bank;
 - storing the customer data automatically in a customer database file record for the enrolled customer;
 - determining the Relationship score for the enrolled customer automatically from the information stored in the customer database file record; and
 - awarding the Incentive Rewards to the enrolled customer based on the Relationship score.
2. A process as defined in claim 1 wherein the Bank maintains a customer information file by which to conduct day-to-day operations of the Bank, and the step of obtaining the customer data further comprises:
- obtaining at least a portion of the customer data by automatically extracting customer data from the customer information file.
3. A process as defined in claim 1 wherein the customer database file record comprises at least one field and wherein the step of storing the

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establishing a plurality of attributes to designate each field of the customer database file record, the attributes comprising: a first attribute to designate that the field is to be used in determining the Relationship score; a second attribute to designate a category of the information in the field; and a third attribute to designate the point value to be assigned to each Relationship represented by the field;

creating a master dictionary file in which to enter the attributes of each field of the customer database file record;

entering the attributes of each field into the master dictionary file;

retrieving the customer database file record of the enrolled customer;

retrieving the master dictionary file;

mathematically calculating automatically a quantity of points for each field of the customer database file record which is designated by the first attribute by using the second and third attributes of that field.

7. A process as defined in claim 6 wherein the second attribute designates the category of information contained in the field as a numerical value and wherein the step of mathematically calculating the quantity of points further comprises:

designating the field by the first attribute;

using the second attribute to interpret the information in the field as a numerical value;

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plurality of fields less than all of which are designated by the first attribute, and wherein the step of adding the point values for all of the Relationships further comprises:

5 adding together the quantity of points determined for each field of the customer database file record designated by the first attribute to create the Relationship score.

10 11. A process as defined in claim 6 wherein the second attribute designates the category of the information contained in a field as a date, and wherein the step of mathematically calculating the quantity of points further comprises:

15 designating the field by the first attribute;

 using the second attribute to interpret the information in the field as date information representative of a date;

20 subtracting the date information of the third field from the present date to obtain a longevity value representative of a predetermined degree of longevity of the customer with the Bank; and

25 obtaining the quantity of points for the field from a computation using the longevity value and the point value of the field.

30 12. A process as defined in claim 11 wherein the customer database file record contains a plurality of fields less than all of which are designated by the first attribute, and wherein the step of adding the point values for all of the Relationships further comprises:

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joint owner, wherein a field of the customer's customer database file record represents a Relationship that is jointly owned with the joint owner, wherein the attributes further comprise a fourth attribute which has a logical value to designate a procedure for calculating the quantity of points for a field which represents the jointly owned Relationship, and wherein the step of determining the Relationship score further comprises:

determining a first quantity of points for the field of the customer's customer database file record for the jointly owned Relationship;

determining a second quantity of points for a corresponding field of the joint owners customer database file record for the jointly owned Relationship;

selecting a larger one of the first or second quantity of points to produce the customer's quantity of points for each field of the customer's customer database file record that is designated by the fourth attribute.

15. A process as defined in claim 1 wherein the step of awarding Incentive Rewards further comprises:

establishing a predetermined vesting relationship to determine the customer's entitlement to an award of the Incentive Rewards; and

using the vesting relationship to determine the Incentive Reward automatically.

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computer, and wherein the step of producing the management reports further comprises:

retrieving automatically customer data describing enrolled customers from the customer database file record;

extracting automatically customer data describing not enrolled customers from the customer information file; and

utilizing the retrieved and extracted customer data for enrolled and not enrolled customers to prepare the management report.

20. A process as defined in claim 19 executed on at least one digital computer.

21. A process for scoring each Relationship that a customer has with a Bank and awarding an Incentive Reward to the customer based on a Relationship score using a computer having a memory, comprising:

storing data in the memory of the computer which represents a point value assigned to each of a plurality of different Relationships that are offered to customers by the Bank;

storing data in the memory of the computer which specifies each Relationship that the customer has with the Bank;

correlating each Relationship that the customer has with the Bank and the point value assigned to that Relationship by using the computer to access the data stored in the memory;

computing a Relationship score for the customer by using the computer to total the point

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identifying each customer of the Bank, the customer information file normally being used by the computer to accomplish typical data processing operations of the Bank;

5 creating a customer database file in
memory of the computer which contains a customer
record for each customer and a plurality of fields,
the information in at least one of the fields of the
customer record also being present in the customer
10 information file;

 creating a master dictionary file in
memory of the computer which contains a plurality of
attributes which describe the information contained
in the fields of the customer record, the attributes
15 including one which describes the field as one which
is to be used in computing the Relationship score
and another attribute which describes the
information in the field as a point value associated
with each Relationship; and

20 computing the Relationship score by making
a computation using the information in the fields of
the customer record of the customer database file
and an attribute of the master dictionary file.

25 25. A process as defined in claim 24, further
comprising:

 obtaining information from the customer
information file by operation of the computer to
include in at least one of the fields of the
customer record.

30 26. A process as defined in claim 24, further
comprising:

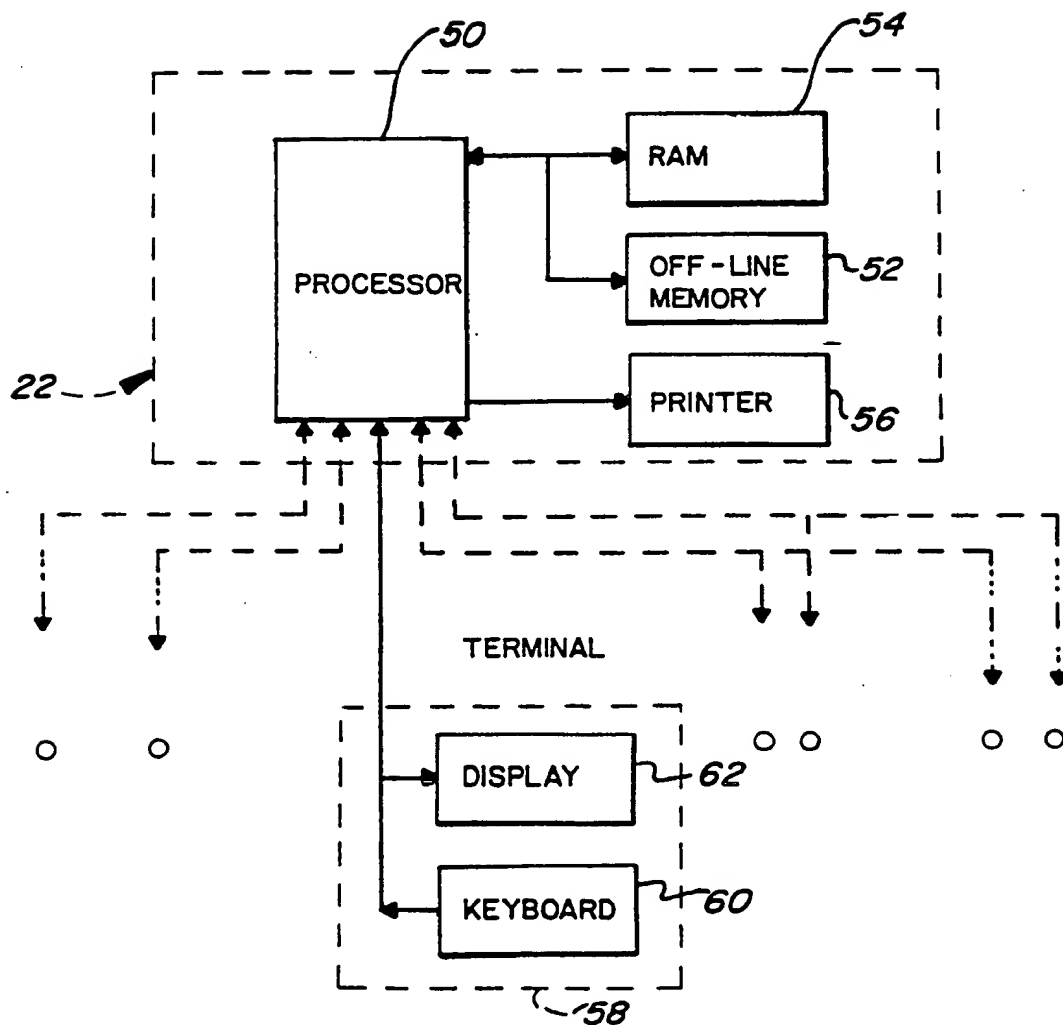
SUBSTITUTE SHEET

55

logical procedure involving the scores for the corresponding Relationships of the first and second customers.

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2/17



Fig_2

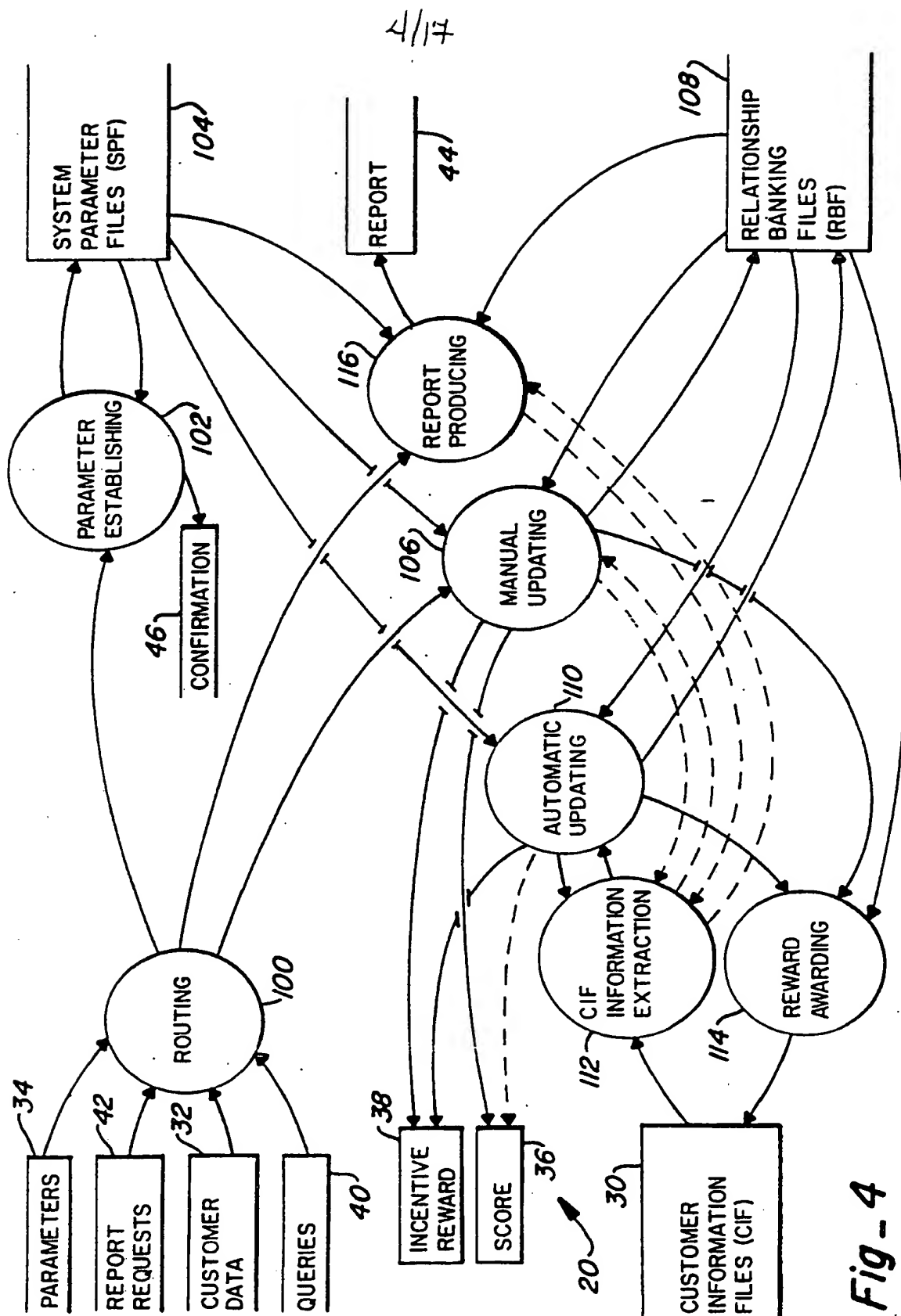


Fig - 4

6/17

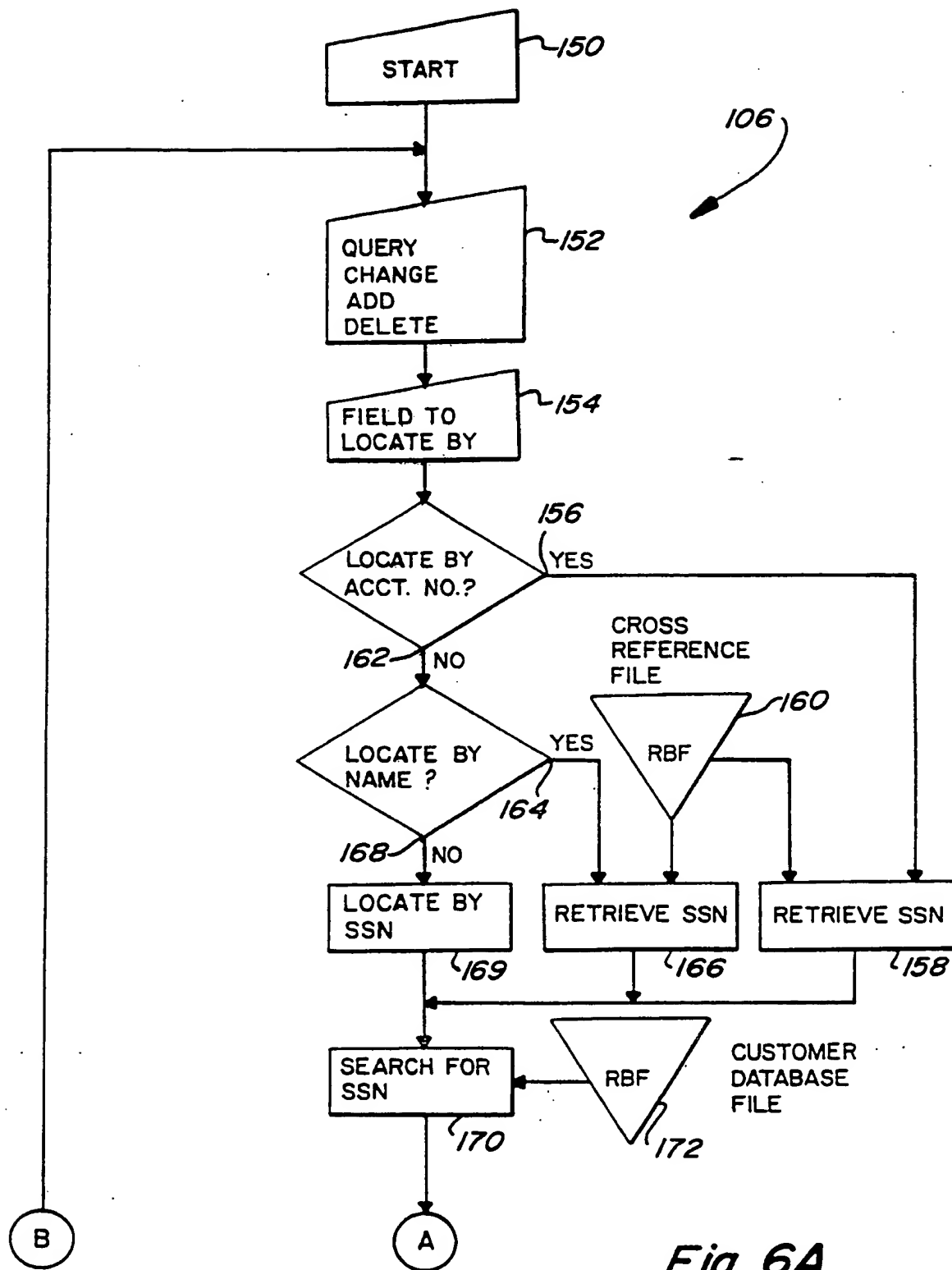
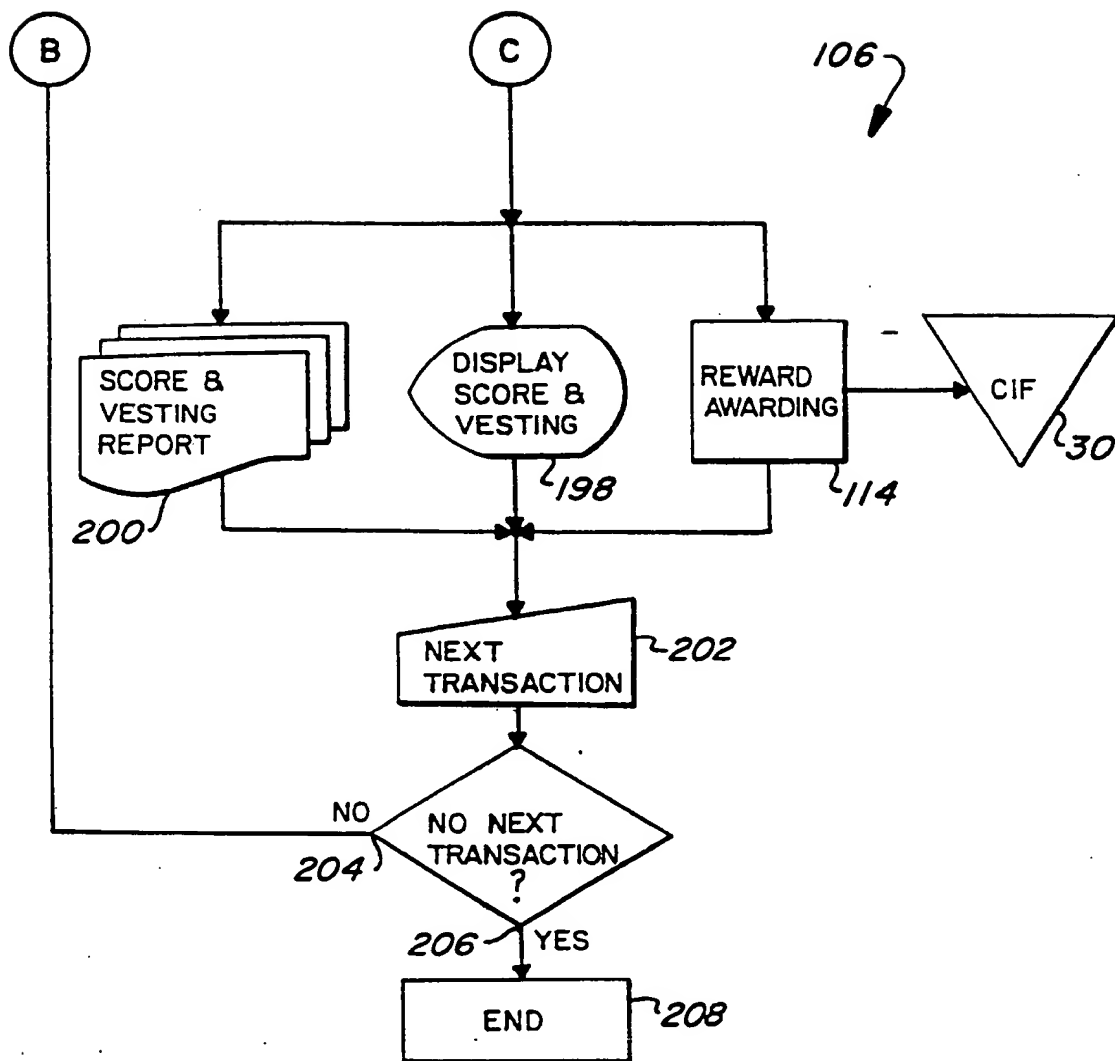
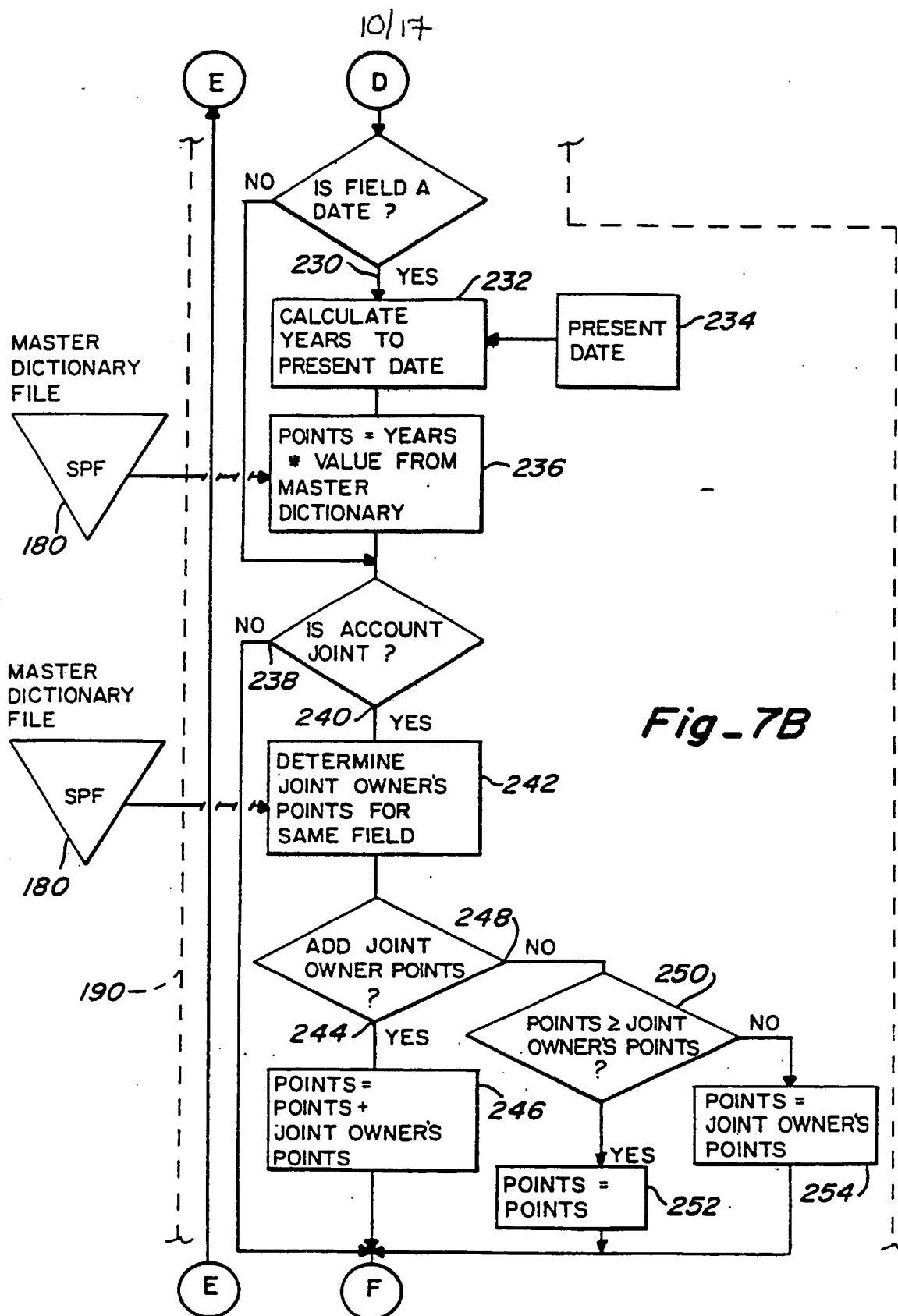


Fig-6A

8/17



Fig_6C



12/17

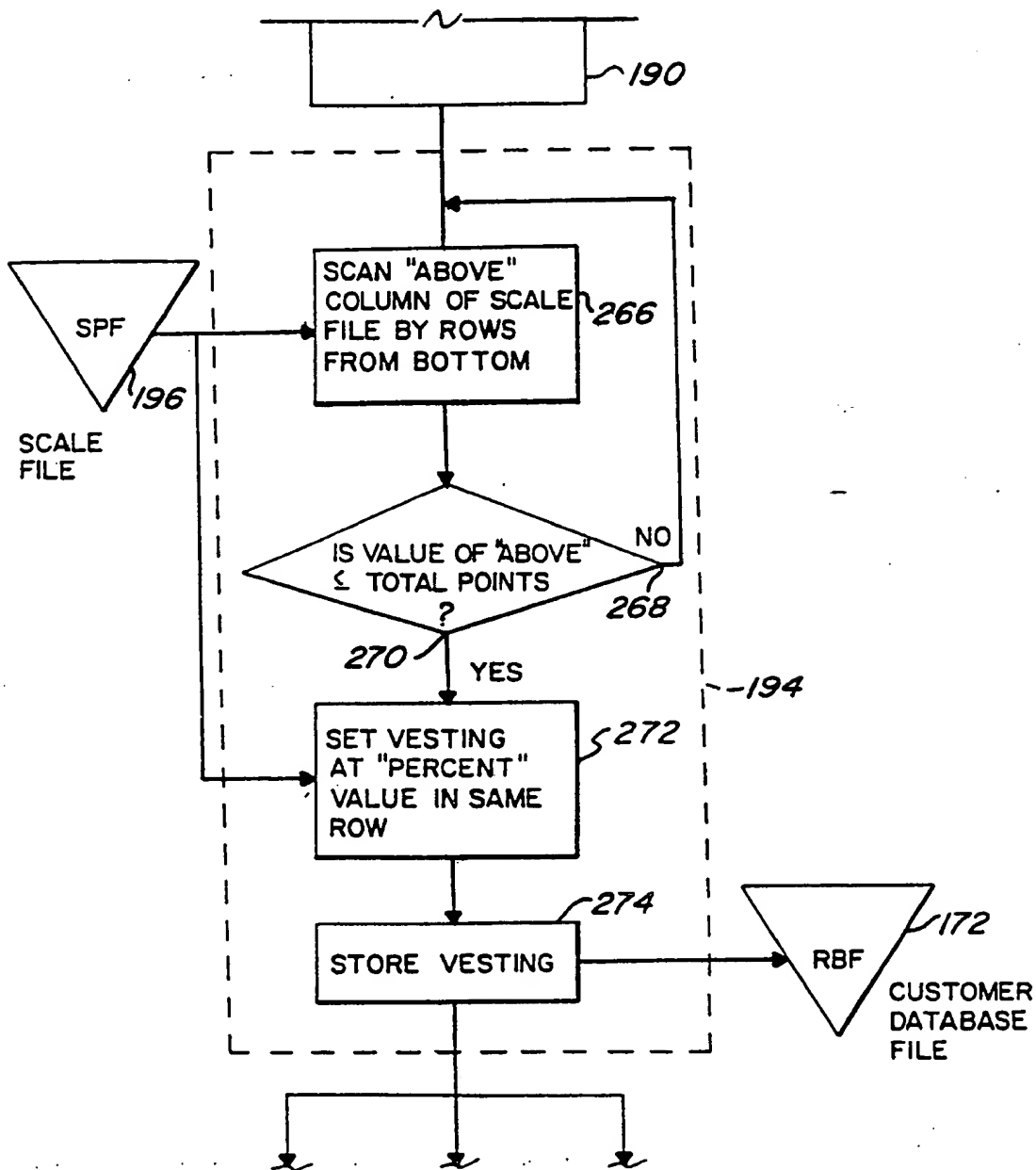


Fig. 8

```

graph TD
    290[SCHEDULED INITIATION] --> 292[RETRIEVE SSNs]
    288[MANUAL INITIATION] --> 292
    292 --> 172a[/RBF/]
    172a --> 292
    292 --> 294[RETRIEVE CUSTOMER RECORD]
    294 --> 172b[/RBF/]
    172b --> 294
    294 --> 296[UPDATE CUSTOMER RECORD]
    296 --> 180a[/SPF/]
    180a --> 296
    296 --> 112[CIF INFO. EXTRACT.]
    30[/CIF/] --> 112
    112 --> 296
    296 --> 190[DETERMINE RELATIONSHIP SCORE]
    190 --> 180b[/SPF/]
    180b --> 190
    190 --> 194[DETERMINE VESTING]
    194 --> 196a[/SPF/]
    196a --> 194
    194 --> 172c[/RBF/]
    172c --> 194
    194 --> G((G))
    194 -- H --> 292

```

Fig. 10A

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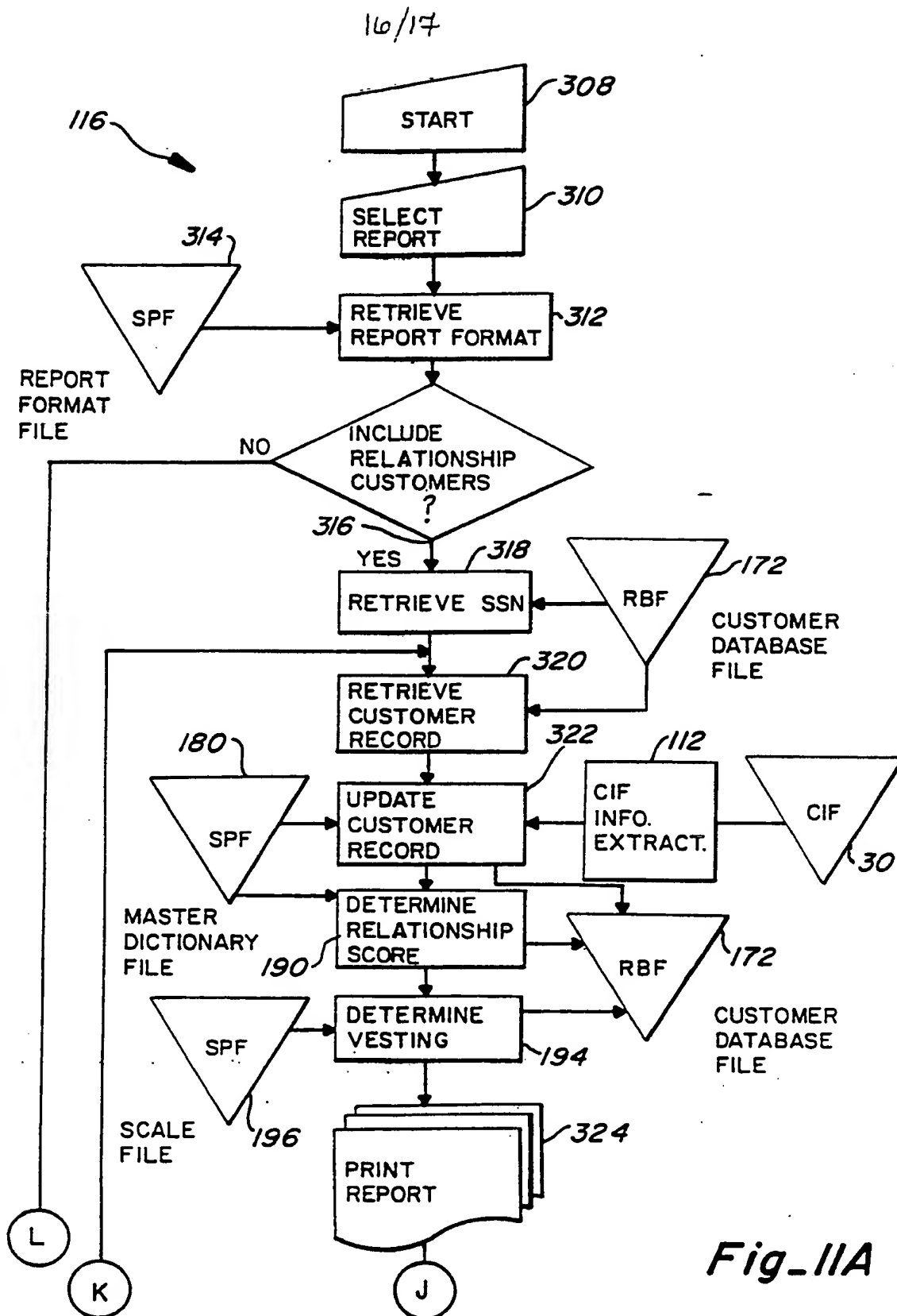


Fig. IIA

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A	News Release, First National Bank of Clarion, Iowa, June 1, 1990. See the entire document.	1, 21
Y	Loyalty Banking Program, Loyal Customer Reward Program, First National Bank of Clarion, Iowa, June, 1990. See the entire document.	1, 21
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Date of the actual completion of the international search 10 FEBRUARY 1993	Date of mailing of the international search report 22 APR 1993	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer X. CHUNG <i>Nicholas W. Chung</i>	
Facsimile No. NOT APPLICABLE	Telephone No. (703) 305-3800	

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Y	The Harrison Library, Ref. #2, 1989, 64 pgs. See the entire document.	1, 21
A	News Release, First National Bank of Clarion, Iowa, June 1, 1990. See the entire document.	1, 21
Y	Loyalty Banking Program, Loyal Customer Reward Program, First National Bank of Clarion, Iowa, June, 1990. See the entire document.	1, 21
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Date of the actual completion of the international search 10 FEBRUARY 1993	Date of mailing of the international search report 22 APR 1993	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. NOT APPLICABLE	Authorized officer <i>Nicholas W. Chung</i> X. CHUNG Telephone No. (703) 305-3800	

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